

# West Nile Virus Newsletter

Zoonotic Disease Program, Washington State Department of Health

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Volume 4, Issue 3

## Purpose

To keep our partners and other interested entities informed about West Nile virus (WNV)

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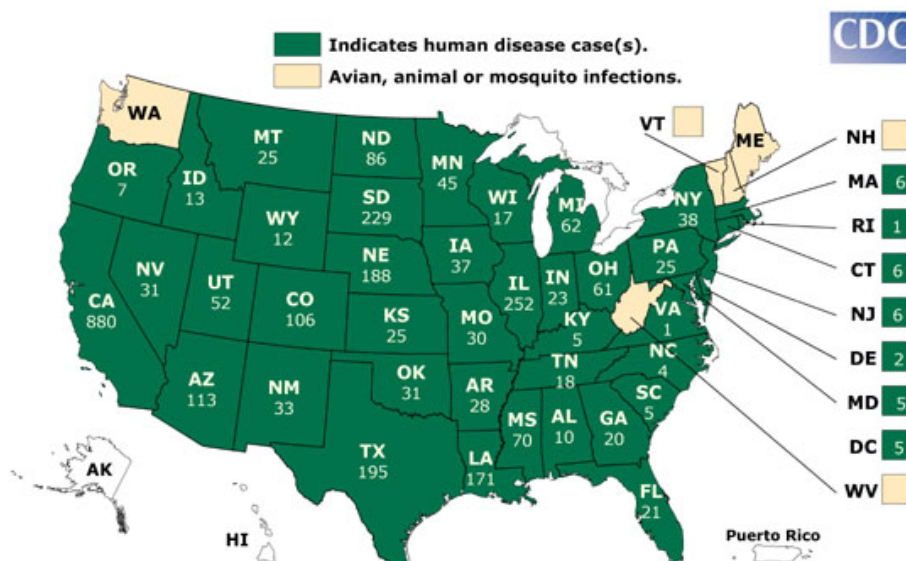
View the [April 27, 2006](#) WNV Newsletter

## Subscribe, Submit Articles, Suggestions

Contact Ben Hamilton  
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## Final 2005 West Nile virus activity in the United States

Surveillance findings reported to CDC, January 1, 2005 through December 31, 2005



### Humans

In 2005, a total of 43 states and the District of Columbia reported 3,000 human cases. Among 2,828 cases with available clinical and demographic data, the median age was 51 years (range: 3 months – 98 years), and 1,609 (57 percent) were males. Of the 2,828 cases, 1,254 (44 percent) were neuroinvasive (reported as meningitis and/or encephalitis) and there were 119 fatalities. The median age of the known decedents was 76 years (range: 16 – 98 years).

### Veterinary

A total of 1,253 WNV infected animals were reported, of which 1,181 (94 percent) were horses and 72 were other species such as squirrels and canines.

### Birds

A total of 5,393 WNV infected birds were reported nationally. Of these, 4,385 (81 percent) were corvids (crows, jays, magpies, ravens) and 1,008 were other types of birds.

### Mosquito Pools

*Culex* species made up the majority of the 11,816 infected mosquito pools collected nationally.

### Sentinels

The majority of sentinel work is done with chickens, 1,651 cases were detected.

National maps are at <http://www.cdc.gov/ncidod/dvbid/westnile/surv&control.htm>.

## Web Resources

Washington State  
Department of Health  
[www.doh.wa.gov/wnv](http://www.doh.wa.gov/wnv)

Centers for Disease  
Control and Prevention  
[www.cdc.gov/ncidod/dvb/id/westnile](http://www.cdc.gov/ncidod/dvb/id/westnile)

US Geological Survey &  
CDC ArboNET maps  
<http://westnilemaps.usgs.gov/index.html>

Washington State  
University Cooperative  
Extension  
[www.wnv.wsu.edu](http://www.wnv.wsu.edu)

Washington State  
Department of  
Agriculture  
[www.agr.wa.gov/FoodAnimal/AnimalHealth/Diseases/WestNileVirus/default.htm](http://www.agr.wa.gov/FoodAnimal/AnimalHealth/Diseases/WestNileVirus/default.htm)

## Northwest Links

Idaho Department of  
Health & Welfare  
[www.westnile.idaho.gov](http://www.westnile.idaho.gov)

Oregon Department of  
Human Services  
<http://egov.oregon.gov/DHS/ph/acd/diseases/wnile/survey.shtml>

British Columbia Center  
for Disease Control  
<http://www.bccdc.org/con tent.php?item=183>

## "Amplification" strategy may be key to combating WNV

*Oregon State University, Media Release, May 4, 2006*

CORVALLIS, Ore. – The spread of West Nile Virus appears to be triggered by a complex interaction of mosquitoes, nesting birds and specific weather patterns, scientists say, which leads to "amplification" of the virus within mosquito populations.

Researchers from Oregon State University and the University of Florida have identified how those factors mesh to create heightened risk of the West Nile Virus in southern Florida, and they hope to expand their studies to the rest of the nation.

Results of the research have been published by the Centers for Disease Control.

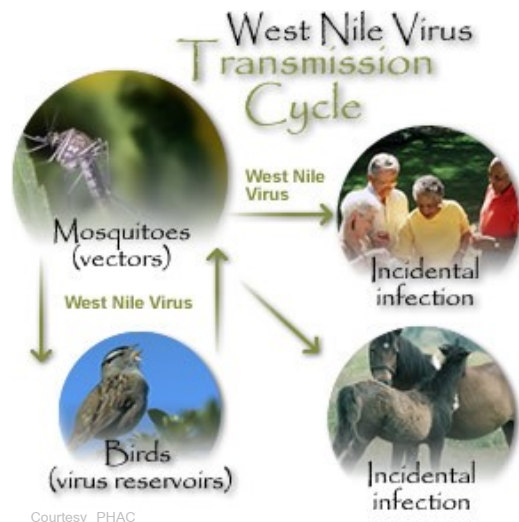
Many early hydrologic models predicting the transmission of West Nile Virus and other mosquito-borne diseases may have been a bit too simplistic, relying on factors such as total rainfall to estimate disease risk, said Jeffrey Shaman, an assistant professor of atmospheric sciences at Oregon State University. The situation, he adds, is much more complex.

Researchers call the process through which more mosquitoes become infected 'amplification,' and there are a number of factors that lead to that stage. "By identifying these factors in the wild, it will enhance our ability to create control strategies."

In their studies, Shaman and colleague Jonathan F. Day from the University of Florida found that spring drought followed by continual summer rainfall is critical for the amplification and transmission of West Nile Virus and a similar disease, St. Louis Encephalitis Virus, in southern Florida. When drought occurs early in the year, the limited water resources confine mosquito populations to selected habitats – specifically isolated, densely vegetated hammocks where conditions remain humid.

These moist hammocks also happen to be the spring nesting and roosting sites of many species of wild birds, which act as hosts and carriers for the diseases. While confined in the hammocks, the mosquitoes feed almost exclusively on the nesting birds and as a result, each bird is bitten by numerous mosquitoes. A single infected bird can thus infect many more mosquitoes than if conditions were wet and the mosquitoes were more broadly dispersed, Shaman said.

When summer rainfall increases, surface humidity levels rise and the mosquitoes are able to disperse and initiate secondary transmission away from the original amplification sites, the researchers pointed out. With this dispersal, the mosquitoes are more likely to come into contact with humans – elevating the risk of human incidence of the diseases.



## DOH WNV Contacts

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### Publication Requests

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### Aquatic Mosquito Control NPDES Permit

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### WNV in Humans

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Disease Epidemiology  
206-418-5500 or  
877-539-4344

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Not all of the world's more than 3,600 species of mosquitoes transmit diseases to humans. The mosquito must be sufficiently competent to act as a carrier, thus some species can act as hosts for certain diseases, while others are more "refractive," – not carrying enough of the disease to transmit it.

West Nile Virus transmission requires mosquito species that prefer feeding on birds, but like mosquitoes, not all birds are good carriers. Some are ineffective hosts, Shaman said, while others – like crows – are very susceptible and may die from the virus. Birds that are effective hosts may carry the virus and infect biting mosquitoes for 4-5 days before recovering from the illness.

"It is this coming together of factors that leads to the spread of the disease," Shaman said. "But because the amplification is concentrated – in time and space – it does make it easier to devise control strategies. Chemical application is the most likely scenario, but because it could be applied in selected areas, it would be more cost-effective and potentially less environmentally threatening."

The spread of West Nile Virus through the U.S. has been sporadic, the researchers say, with hotspots arising one year in Colorado, and other regions during other years. The key to understanding the spread of the disease is to investigate the local conditions that may lead to amplification.

Read the entire OSU news release article at  
<http://oregonstate.edu/dept/ncs/newsarch/2006/May06/westnile.html>.

## WNV activity in Latin America and the Caribbean

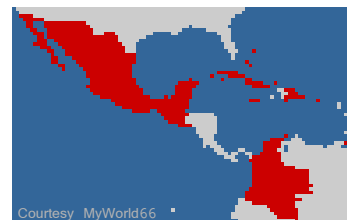
*Nicholas Komar, et al., Pan American Journal of Public Health, Vol. 19, Issue 2, March 2006*

**Objectives.** West Nile virus (*Flavivirus: Flaviviridae*; WNV) has spread rapidly throughout the Caribbean Basin since its initial detection there in 2001. This report summarizes our current knowledge of WNV transmission in tropical America.

**Methods.** We reviewed the published literature and consulted with key public health officials to obtain unpublished data.

**Results.** West Nile virus infections first appeared in human residents of the Cayman Islands and the Florida Keys in 2001, and in apparently healthy Jamaican birds sampled early in 2002. Serologic evidence of WNV infection in 2002 was detected in horses, chickens and resident free-ranging birds in Guadeloupe, the Dominican Republic, and eastern Mexico. In 2003, WNV spread in Mexico and northern Central America, and serologic evidence was detected in the Bahamas, Puerto Rico and Cuba. In 2004, the first serologic evidence of WNV activity in South American ecosystems surfaced in September-October in Colombia and Trinidad, where domestic animals circulated WNV-neutralizing antibodies.

**Conclusions.** The sparse reports of equine, human and avian disease in Latin America and the Caribbean is puzzling. Isolates are needed to evaluate viral attenuation or other possible explanations for reduced disease burden in tropical ecosystems.



Courtesy: MyWorld66

View this research article at [http://journal.paho.org/?a\\_ID=307](http://journal.paho.org/?a_ID=307).